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BACKGROUND INFORMATION

ON THE

COMMERCIAL USE OF SPACE

National Aeronautics and Space Administration
Washington, D.C.



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Office of the Administrator

The President's Plan for Space

A PARTNERSHIP FOR PROGRESS

STATEMENT FOR PRESS BRIEFING

JANUARY 26, 1984

JAMES M. BEGGS, NASA ADMINISTRATOR

In his State of the Union message yesterday, President Reagan proposed a bold and imaginative program that will maintain United States' leadership in space well into the 21st century.

In outlining his comprehensive plan for space, the President has charted a course that will set our national agenda in space through the 1990s and beyond. He has declared that the nation is ready to take its next logical step into space with the development of a permanently manned Space Station. He has invited our friends and allies to join us in this program. And he has called for a government-industry partnership for progress to ensure that our society will benefit from the commercial development of space through the involvement of our private enterprise system.

The President has called on Americans to invoke once again the vision, will and pragmatism that have brought us in the span of a human lifetime from the first powered flight to the routine access to space we enjoy today with the Space Shuttle. His program leaves no doubt that the United States means business in expanding our presence in space, not only for our own benefit, but for the benefit of peace-loving people around the world.

The President's initiatives are the right ones for the right time in our history. They come at the dawn of a new era in space, a time when not only can we dream great dreams, but also have the tools to bring them to reality. They represent a specific response to state-of-the-art technology and to what we have already proven that we can do in space. They will open new avenues of opportunity to benefit our life on earth. And they will enable both government and industry to forge a new partnership to realize the commercial potential of space.

With Congressional approval of a Space Station, the United States will send a signal to industry that government will create the necessary foundation that will enable the private sector to move quickly and decisively into space investments.

In principle, the infrastructure we will build will be no different than those we established to meet the great goals of earlier years to expand and strengthen our economy through the use of hitherto untapped government resources. We established publicly-funded programs to support development of our highways, airports and railroads. The proposal to do the same for space will enable the commercial sector to work in partnership with government to open the realm of space to any number of promising enterprises.

The United States now has two of the three elements we need to make this happen.

The first is a firm and consistent National Space Policy, which calls for government to develop a "climate conducive to expanded private sector investment and involvement in space activities."

The second is an operational Space Transportation System, with the Space Shuttle as its centerpiece. The system is economical, reliable and efficient, and we are working to make it even more so, since it is the key to routine access to space for both civil and national security missions and will be the key to Space Station development and operations.

As we move to meet our new obligations, making the Shuttle fully operational and cost-effective will remain NASA's highest priority.

The third element will be the permanently-manned Space Station in earth orbit that will serve as base for scientific, commercial and technological advances in space operations. The American people have indicated they will support such a program. Congressional approval will make it possible to have such a facility in orbit within a decade.

We intend to move forward on three fronts to carry out the President's initiatives.

First, the Space Station. As you know, over the past two years, NASA has conducted preliminary planning efforts to define commercial and scientific requirements and uses for a Space Station and to gather information for the President and the Congress as the decision point approached.

Over the next two years, NASA will be conducting an extended definition effort in order to minimize program risk and to make maximum use of the Space Station's capabilities. We plan to involve American industry in the systems design process, to establish test facilities to evaluate Space Station concepts and technologies and to develop advanced technologies to be incorporated into the Space Station. We also plan to realign our internal organizational structure at the highest levels to realize these objectives.

International cooperation in space has long been a basic principle of the United States' space program. We have found that joint ventures benefit both ourselves and our partners. The President's new international initiative will deepen our commitment to working with all nations to explore the peaceful uses of space.

The President has asked me to visit major world capitals as his personal envoy to explain the Space Station initiative and to follow-up on his invitation to our friends and allies to join in the program, and thus, to share in the benefits. During this trip I will assess the extent of foreign interest and explore opportunities for constructive international participation.

To carry out the President's initiative on the commercial uses of space, NASA will establish a high-level office to serve as a focal point for our activities. This new office will be responsible for stimulating commerce within the context of the President's space policy.

Private investments in space are expected to yield many important economic advantages, to advance science and technology, and to help maintain United States leadership in space. They are also expected to enhance our competitive international trade position and thus, to improve our balance of payments.

The three specific types of commercial space ventures NASA will consider, in order of importance, are: new commercial high-technology ventures, new commercial applications of existing space technology and commercial ventures resulting from the transfer of existing space programs to the private sector.

When stakes are high and risks great, Americans have always displayed what Shakespeare called "the dauntless spirit of resolution" that has enabled us to meet great challenges. The President's new space program initiatives are such a challenge. And in our minds and in our hearts, I believe we have what it takes to meet it.

Thank you very much.

And now I would like to introduce John Hodge and Bud Evans, who will give you their perspectives on the Space Station and the Commercial Uses of Space, respectively. And when they are finished, we'll be happy to take any questions. John, it's all yours.

THE COMMERCIAL USE OF SPACE

A Fact Sheet

Introduction

President Reagan, in his State of the Union Address of Jan. 25, 1984, and in his National Space Policy of July 4, 1982, made the expansion of private investment and involvement in space a major objective of the United States Government. The Congress endorsed this thrust in 1983 committee reports from both Houses.

Commercial space endeavors offer major benefits to the nation with the potential of new industries, new jobs, lower product costs and an improved balance of trade. Technological advances from the commercial use of space offer the potential for dramatically improved treatment of diseases which have long plagued society, major advances in electronics and computers, lighter and stronger metals and major new advances in communications.

The President's program is designed to encourage private enterprise in space commerce to take advantage of these opportunities. The policy introduces approaches and incentives to reduce the risks inherent in commercial space ventures to levels competitive with conventional investments.

Communications Industry Sets Example

The international communications industry offers the best example to date of what can be done when private industry and government team up to turn the opportunities of space into products and services needed on earth.

Twenty-one years ago NASA pioneered development of communications satellites and provided a technology base for the commercial use of such systems. The growth of satellite systems since that time has been startling and has reduced communications costs greatly. The communications satellite industry today does more than \$2 billion of business each year and employs directly or indirectly, more than 1 million people -- mostly Americans -- in the design, construction and use of satellites, earth stations, TV hookup, telephone installation, and associated sales and servicing. More than two-thirds of all overseas communications traffic is now relayed by privately owned and profitable satellites and there are a number of domestic satellite systems in operation. More than 80 communications satellites are currently in service and it is estimated that as many as 300 more will be required by the end of the century.

Today, the Space Shuttle, with its low-stress launch, highly sophisticated in-flight facilities and runway landing ability, has opened unprecedented opportunities for the development of research and production facilities in space.

On the ninth Shuttle flight in November 1983, for example, a crew of scientists and astronauts worked inside a fully equipped orbiting laboratory with more than 70 scientific and technological investigations on board and then returned the 32,000-pound (14,500-kilogram) facility to earth.

Factories in Space

Taking advantage of the opportunity provided by the Shuttle, Johnson & Johnson and McDonnell Douglas are working with NASA to begin developing a space-based prototype for the large-scale extraction of valuable biological materials useful in the production of new medications for the treatment of such serious illnesses as diabetes and certain forms of cancer.

In addition to the work on a prototype space production facility, firms are beginning to explore uses for the findings from NASA's research in the areas of crystal growth. The areas of interest are the production of improved semiconductors, organic materials, and catalysts useful in the electronics and computer industries, the communication industries and chemical industries. Also of interest is the production of latex microspheres useful in the fields of medicine, biology, and scientific research.

Objectives

Private investments in space are expected to:

- * yield important economic advantages;
- * advance science and technology;
- * help maintain U.S. space leadership; and
- * enhance the nation's competitive position in international trade.

Strategy

NASA will support commercial space ventures in the following categories, listed in order of importance:

- * new commercial high-technology ventures;
- * new commercial applications of existing space technology;
and
- * commercial ventures resulting from the transfer of existing space programs in the private sector.

Reducing Risks

NASA will seek to reduce the technical, financial and institutional risks associated with doing business in space and it will establish a high-level office within the agency to serve as a focal point for commercial space matters.

To reduce technical risks, NASA will support research aimed at commercial applications; ease access to NASA experimental facilities; establish scheduled flight opportunities for commercial payloads; disseminate space technology information of commercial interest, and support the development of facilities necessary for commercial uses of space.

To reduce financial risks, NASA will continue to offer reduced-rate space transportation for high-technology space endeavors; assist in integration of commercial equipment with the Shuttle; provide seed-funding to stimulate commercial space ventures; and, under certain circumstances, purchase commercial space products and services and offer some exclusivity.

To reduce institutional risks, NASA will speed integration of commercial payloads into the Orbiter; shorten proposed evaluation time for NASA/private sector joint endeavor proposals; establish procedures to encourage development of space hardware and services with private capital instead of government funds; and introduce new institutional approaches for strengthening NASA's support of private investment in space.

Benefits

Today NASA and industry see a number of potential benefits that are likely to materialize from space commerce:

1. The refining of biological materials to develop improved treatments for such diseases as certain cancers, diabetes and certain kidney diseases.
2. The development of ultra-pure semiconductor crystals for use in super-fast computers and electronic devices of interest to defense electronic industries.
3. The production of super-light, high strength materials which could lead over the next decade, to a new generation of high performance airplanes and high-strength, super-insulating materials for use in homes, cars and airplanes.
4. In the area of communications, new business involved in electronic mail and computer-to-computer communications will change current concepts of communicating with the written word, dramatically reduce the cost of doing so, increase tax revenues and improve the overall productivity of the nation.

THE COMMERCIAL USE OF SPACE

Questions and Answers

It is the policy of the U.S. Government, proclaimed by President Reagan to encourage and facilitate the private sector's investment and involvement in space.

IS THERE AN EXAMPLE OF A COMMERCIAL USE OF SPACE?

The communications industry offers the best example to date of the commercial use of space.

Twenty one years ago, NASA pioneered the development of civil communications satellites. This work provided a technology base for commercial use of communications satellites. Commercial operations began in 1965. The growth of communications satellites since that time has been startling and has resulted in reducing communications costs greatly. More than two-thirds of all overseas communications traffic is now relayed by satellite and there are a number of domestic satellite systems in operation. There are more than 80 satellites on orbit. There are thousands of earth stations in commercial service in America alone. It is estimated that traffic demand will require launch of as many as 300 more communications satellites by the end of the century. The communications satellite industry does more than \$3 billion of business each year and employs directly and indirectly more than a million people -- mostly Americans -- in the design, construction and use of satellites, earth stations, TV hookup, telephone installation, and associated sales and servicing.

Major communications carriers such as RCA, Western Union, and AT&T rely heavily on communications satellites for major portions of their daily business. Much of the daily radio and television programming to U.S. audiences is transmitted via commercial satellites, and an entire new communications industry is arising through the commercial application of computers and satellites to process and transmit a wide variety of data used in business, industry, and Government.

Though well-known in the trade, few Americans realize that Time, Newsweek, USA Today, and the Wall Street Journal are electronically mailed by communications satellites from New York to various regional centers for local editions.

In 1963, America demonstrated the technical, operational and economic viability of a communication satellite in geostationary orbit with NASA's SYNCOM satellite. This demonstration spawned a new industry. Now, only 21 years later we have newly developed

firms such as Satellite Business Systems Corporation, Ford Aerospace Corporation, and Hughes Communications Corporation whose entire business involves and requires considerable investment in communications satellites and space communications technology.

The burgeoning communication satellite industry serves as a model for numerous potential commercial activities in space - activities where the Government in partnership with industry will identify promising new high-technologies for commercial development. The Government will provide research facilities and seed money to assist industry in determining the feasibility of new technology. Industry will then invest significant capital and engage its applications and marketing skills to make the technology commercially viable.

WHY NOW?

The Space Shuttle, a newly operational national transportation system, provides routine access to and return from space. Like the railroads, airlines and freeways, commercial use of the Space Transportation System is expected to improve the national economy. By starting its space commerce program now, the United States can stay ahead of foreign competition and strengthen its position in international trade. Among the possible benefits from space commerce are new medicines for fighting some of our most widespread diseases; Unique metallic alloys that may have magnetic, mechanical, and electrical properties superior to those produced on earth by conventional techniques; electronic components with unprecedented qualities; computers faster than any now in existence; improved global communications for wider dissemination of knowledge; and a better understanding of our environment and its resources.

WHO WILL GO INTO SPACE?

Increased use of space is expected by the American communications satellite firms. New uses of space are expected to emerge from R&D currently underway. More than 100 American firms have already shown an interest in commercial use of space. The best-known example of the potential new commercial space ventures is that of Johnson & Johnson, McDonnell Douglas who have joined together to begin the development of a space-based refinery that will permit the large-scale extraction of valuable biological materials useful in the production of new medications to treat serious illness.

In addition to the work on prototype space production facility, firms are beginning to explore uses for the findings from NASA's research in the areas of crystal growth. The areas of interest are the production of improved semiconductors,

organic materials, and catalysts useful in the electronics and computer industries, the communication industries and chemical industries. Also of interest is the production of latex microspheres useful in the fields of medicine, biology, and scientific research.

WHAT INITIATIVES WILL BE TAKEN TO STIMULATE INVESTMENT IN SPACE VENTURES?

Many industries show interest in exploring the commercial possibilities of space. A major impediment are the risks inherent in private investments in space which exceed the risks of most conventional investments on Earth. To implement the President's initiatives in commercial uses of space, NASA will seek to reduce the risks associated with operating in space. These efforts include reducing institutional financial and technical risks. NASA will:

- * Reduce financial risks through providing easy and inexpensive roundtrip transportation between earth and orbit; helping with the installation of commercial equipment in the Shuttle, and seed-funding of high technology commercial research.
- * Reduce technical risks through sharing its experience, know-how and patents; additional research and dissemination of research results, and development of facilities necessary for the commercial use of space.
- * Reduce institutional risks by lessening bureaucratic requirements and maintaining policies favorable to space commerce.

IN SUMMARY; WHAT BENEFITS CAN AMERICA EXPECT FROM NEW COMMERCIAL USES OF SPACE?

Today NASA and industry see a number of potential commercial space benefits that are likely to materialize:

1. The refining of biological materials to develop improved treatments for such diseases as certain cancers, diabetes, and certain kidney diseases.
2. The development of ultra-pure semiconductor crystals for use in super-fast computers and electronic devices of interest to defense electronic industries.
3. The productivity of super-light, high-strength materials which could lead over the next decade to high performance airplanes and high-strength, super-insulating materials for use in homes, cars, and airplanes.
4. In the area of communications satellites, we can see new business involved in electronic mail and computer-to-

computer communications that will change our current concept of communicating with the written word, dramatically reduce the cost of doing so, increase tax revenues and improve the overall productivity of the nation.

President Reagan, in the National Space Policy of July 4, 1982, made the development of "a climate conducive to expanded private sector investment and involvement in civil space activities" a major objective of the United States Government. Reports by Committees of both Houses of Congress have strongly endorsed the encouragement of commercial space endeavors.

Early space commerce projects may resemble offshore oil platforms and antarctic research stations because of their isolation and distance from conventional work places. Ultimately, work in space will become as familiar and routine as work in our factories, shops, offices and homes on the Earth.

Space commerce, with its bright promises, will challenge our nation's innovative powers and keep our nation in the forefront of humankind's advances.

With firm resolve and the commitment of reasonable resources over a number of years and with Government, academic and private enterprise working together, space can be turned into an arena of immense benefit for our nation.

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